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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,238	10/03/2003	Yee Soong	S-100,793	9112

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UNITED STATES DEPARTMENT OF ENERGY
1000 INDEPENDENCE AVENUE, S.W.
ATTN: GC-62 (CHI), MS 6F-067
WASHINGTON, DC 20585-0162

EXAMINER	
LARKIN, DANIEL SEAN	
ART UNIT	PAPER NUMBER
2856	

DATE MAILED: 03/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	**Application No.** 10/677,238	**Applicant(s)** SOONG ET AL.	
	Examiner Daniel S. Larkin	**Art Unit** 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 February 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *6-14* is/are allowed.

6)☒ Claim(s) *1-5 and 16* is/are rejected.

7)☒ Claim(s) *15 and 17-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings were received on 16 February 2005. These drawings are approved.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,567,765 (Rao et al.) in view of US 6,039,059 (Bran).

With respect to the limitations of claim 1, the reference to Rao et al. discloses an autoclave system for testing fluid samples, such as cement slurries or any fluid sample comprising a sealed container having an inner and outer wall (150) holding the slurry; and first and second transducers (not shown) for transmitting and receiving ultrasonic signals. The reference to Rao et al. fails to disclose that each transducers is placed within an isolating coupler which isolate the transducers from heat and pressure in the sealed container (150). The reference to Bran discloses a wafer cleaning device which utilizes a transducer (140) placed within an isolating coupler (120) which isolates the transducer from a container (100). Providing means for isolating each transducer from the sealed container would have been obvious to one of ordinary skill in the art as a means limiting the heating of the transducer such that one ensures that one is always able to operate the acoustic transducer up to the allowable acoustic intensity limit without having to deal with temperature contamination from the container.

With respect to the limitation of claim 2, the reference to Rao et al. fails to disclose a source of coolant connected to each coupler. The reference to Bran discloses that coolant is supplied to an annular groove (136) to suitably cool the apparatus, col. 4, lines 65-67 and col. 6, lines 29-46. Providing means to cool the transducer would have been obvious to one of ordinary skill in the art as a means of ensuring that one is always able to operate the acoustic transducer up to the allowable acoustic intensity limit while also maintaining acceptable surface temperatures regardless of how small the transducer is or how much surface area it offers for cooling relative to its acoustic intensity.

With respect to the limitation of claim 3, the reference to Rao et al. appears to show that a closed housing appears around the transducers placed within the transducer bores.

With respect to the limitations of claims 4 and 5, the reference to Rao et al. fails to disclose that the housing is in the general form of a disc. The reference to Bran appears to show that the housing (120) is in the form of a disc having a lateral wall with a port (146) for connection with the source of coolant (124); and opposed end walls coupled to the sealed container (100) and to the transducer (140). Providing a disc shaped housing would have been obvious to one of ordinary skill in the art as a means of reducing the size of the transducer housing as well as allowing the housing to more easily mate to a cylindrical container.

With respect to the limitations of claim 16, the reference to Rao et al. discloses an autoclave system for testing fluid samples, such as cement slurries or any fluid sample comprising a sealed container (150) holding the slurry; and first and second transducers (not shown) for transmitting and receiving ultrasonic signals. The reference to Rao et al. fails to disclose that each transducer is placed within an isolating coupler which isolate the transducers from heat and pressure in the sealed container (150) and a source of coolant connected to each coupler. The reference to Bran discloses a wafer cleaning device which utilizes a transducer (140) placed within an isolating coupler (120) which isolates the transducer from a container (100). A source of coolant is supplied to an annular groove (136) to suitably cool the apparatus, col. 4, lines 65-67 and col. 6, lines 29-46. Providing means to cool the transducer would have been obvious to one of ordinary skill in the art as a means of ensuring that one is always able to operate the acoustic transducer up to the allowable acoustic intensity limit while also maintaining acceptable surface temperatures regardless of how small the transducer is or how much surface area it offers for cooling relative to its acoustic intensity.

Response to Arguments

4. Applicants' arguments filed 16 February 2005 have been fully considered but they are not persuasive.

In response to applicants' argument that there is no suggestion to combine the references, page 4, lines 3-9, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Rao teaches the use of a transducer within a high-pressure environment. Bran teaches that using a coupler attached to a transducer can allow the transducer to operate much longer without over heating which would be advantageous for Rao which operates at high pressure and temperatures.

In response to applicants' argument that Bran is nonanalogous art, page 4, lines 10-21, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Bran discloses a transducer placed within a housing for the purposes of cooling the transducer. Although the transducer of Bran is used in a wafer cleaning device, it is the examiner's position that one of ordinary skill in the art would recognize that transducers with fluid cooled housing would be well-known in the art. Additionally, one of ordinary skill in the art would also recognize that ultrasonic transducers have uses other than for cleaning purposes, such as analysis of slurries, multi-phase detection of fluids, fault detection, etc.

In response to applicants' argument that the combination of the Rao et al. and Bran references do not teach the same invention of applicants, because the combination teaches a vertical orientation of the transducers, rather than a horizontal orientation as taught by applicants, page 5, lines 1-6, the examiner argues that this argument is spurious. Orientating the combined teaching ninety degrees creates transducers that are horizontally orientated. Furthermore, applicants have provided no arguments or proof that the horizontal orientation of the transducers is critical to the operation of the device, and therefore shows unexpected results.

In response to applicants' argument that the references cannot be combined because the modification to the transducers would create a whereby the structures containing the transducers would not be in contact with the body of the assembly and would not be able to keep a seal around the chamber where the mixture is analyzed, page 5, lines 6-14, the examiner fails to understand how this modification would create the argued situation, since Figure 3 of the reference to Rao et al. shows a sealed chamber without the presence of the transducers within the first bore. Modification of the transducer would not necessarily create a situation whereby the chamber could not be sealed. Simply expanding the bore or the apparatus as a whole would be within the requisite ability of one of ordinary skill in the art.

In response to applicants' argument that the reference to Bran fails to teach that the coolant can be "directly' circulated around the transducer itself to maintain the transducer at ambient temperature, page 6, lines 11-13 and 22-23, the examiner points out that this argument is moot since the claim does not require that the coolant is made to circulate directly around the transducer itself. The claim merely recites that a source of coolant is connected to the first and second coupler, which the reference to Bran teaches.

In response to applicants' arguments against the references individually, page 7, lines 1-9, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this instance, even though the Rao alone was recited with respect to claim 3, the rejection of claim 3 in still over Rao et al. in view of Bran, not Rao alone. The examiner has previously acknowledged that the Rao et al. fail to disclose couplers having coolant coming into them.

In response to applicants' argument that the reference to Bran fails to show the housing coupled to the transducer, page 7, lines 20 and 21, the examiner respectfully disagrees. The end wall (18) of Bran is coupled to the transducer (140) through the block (133) and coupled to the sealed container (100) through screws (116). The second end wall is coupled to the transducer through electrical coupling wires (154). The claim does not expressly recite that the end walls are in direct contact with either the transducer and/or the sealed container.

In response to applicants' argument that Bran fails to suggest that the transducer need not be contained completely within the housing, page 7, lines 21-23, the examiner argues that this feature is not expressly recited in the claims. Applicants recited four walls, two peripheral and two end walls, two of which are coupled to the transducer. it is within reason to interpret the claims as inferring that the transducer may be contained completely within the housing, contrary to applicants' argument.

In response to applicants' argument that the claim recites that the transducer is directly coupled to the acoustic member, page 9, lines 5-7, the examiner can find no recitation of directly coupled in the claim. Moreover, the reference to Rao et al. discloses an acoustic member in contact with the transducer. Bran is being used to show that a coupler for cooling the transducer is well known in the art.

In response to applicants' argument that the connecter is isolated from the acoustic member, page 9, lines 8 and9, the examiner argues that although the specification and the drawings may disclose this arrangement, the claims to not expressly recite this limitation. The claim merely recites that the connector is attached to the acoustic member..

Allowable Subject Matter

5. Claims 15 and 17-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 6-14 are allowed.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Larkin whose telephone number is 571-272-2198. The examiner can normally be reached on 8:00 AM - 5:00 PM Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Larkin
AU 2856
25 February 2005

DANIEL S. LARKIN
PRIMARY EXAMINER